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Journal of the Society of Arts.

FRIDAY, MAY 24, 1867.

Announcements by the Council.

ORDINARY MEETINGS.

Wednesday Evenings at Eight o'Clock :—

MAY 29.—“On the Water Supply of the Metropolis in relation to the Conservancy of the Thames and its tributaries, and the demands of the Water Companies.” By J. BAILEY DENTON, Esq.

ARTIZANS' VISITS TO PARIS.

The Council of the Society of Arts, feeling the importance of promoting the intelligent study of the Paris Exhibition and the manufacturing establishments in France by artisans of the United Kingdom, have appointed a Committee in furtherance of this object, and on their recommendation, have passed the following minute :—

At the last and former International Exhibitions held in this country, arrangements were made by the French Government, to facilitate the visits of skilled artisans, and interesting reports on the exhibitions were made by them to their government. Believing that such visits on the part of skilled workmen to these great international displays not only exercise a beneficial influence upon the men themselves, but also upon the progress of industry in the country to which they belong, the Council of the Society of Arts have resolved to raise a fund to be employed, in aiding a limited number of English workmen to proceed to Paris for the purpose of studying the present French Exhibition.

To carry this object into effect, they have agreed on the following plan :—

1st. That a number of selected workmen (the number to depend on the amount of funds at the disposal of the Council) shall be assisted to proceed to and remain in Paris a sufficient time (say three weeks), for the purpose of making a careful study of the exhibition, and of such factories and workshops as they may desire to visit.

2nd. That every man so assisted shall, on his return, make a report to the Society of what he has observed during his stay, in reference to the special industry in which he is engaged, and that it be made a condition of the grant to each man that one-third of the amount be retained until his report shall be supplied to the Society.

3rd. The Council think it will be undesirable to fix the exact time for, or to prescribe the duration of, these visits, or to interfere with any of the arrangements the men may desire to make for their own accommodation; but, in order that they may take advantage of the facilities provided by the Commission organised by the French Government for the study of the exhibition, the men will be placed in communication with that Commission on their arrival in Paris.

4th. A considerable sum will be required satisfactorily to accomplish the important object undertaken by the Society, and, in order to raise these funds, the Council have determined to appeal to the members of the Society, who must be interested in the successful results of this movement, in the belief that they will not hesitate to join in a subscription for the furtherance of the undertaking; and they propose at the same time to communicate with

the various Chambers of Commerce, inviting their counsel and support. The Council have decided to commence the subscription by a vote of one hundred guineas from the funds of the Society.

Members are invited to aid the Council in this undertaking by subscriptions, which should be forwarded to the Financial Officer at the Society's house.

HARVESTING OF CORN IN WET WEATHER.

The Council of the Society of Arts have resolved to offer the Gold Medal of the Society, and a Prize of Fifty Guineas, for the best Essay on the Harvesting of Corn in Wet Seasons.

The first part of such essay—after noticing the various systems at present adopted in damp climates for counteracting the effects of moisture upon cut corn in the field, and for avoiding such exposure in wet seasons by peculiar harvesting processes—should furnish a practical and analytic exposition of the best available means :—

- 1st. Whereby cut corn may be protected from rain in the field.
- 2nd. Whereby standing corn may, in wet seasons, be cut and carried, for drying by artificial process.
- 3rd. Whereby corn so harvested may be dried by means of ventilation, hot air, or other methods; with suggestions for the storage both in the ear and after threshing.
- 4th. Whereby corn, sprouted, or otherwise injured, by wet, may be best treated for grinding or feeding purposes.

The whole to be supplemented by a statement of practical results, and actual cost of each system described; and authenticated estimates of any process proposed for adoption, based upon existing but incomplete experiments.

The above requisitions are given suggestively; not to bind the writer to the order or to limit the treatment of the subject, provided it be kept within the scope of practical experience and utility.

The essays must be sent in to the Secretary of the Society of Arts on or before the 1st of January, 1868.

The Council reserve the power to withhold the whole or part of the prize, in the event of no essay being, in the opinion of the judges, of sufficient merit.

SUBSCRIPTIONS.

The Lady-day subscriptions are due, and should be forwarded by cheque or Post-office order, crossed “*Coutts and Co.*,” and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

FOOD COMMITTEE.

A meeting of the Sub-Committee on Meat was held on Wednesday, the 8th instant. Present—Mr. Clare S. Read, M.P., in the chair; Mr. Ware, Professor J. Wilson, and Mr. Ludford White.

Mr. HERMAN GERHARDT attended at the request of the Committee, and gave evidence as follows:—

The CHAIRMAN—I believe Mr. Gebhardt you are a large salesman and commission-agent in the Metropolitan Cattle Market?—Yes.

Do you receive many cattle from abroad?—Those which are consigned to me are all from abroad—cattle and sheep too.

Can you give the Committee any idea of the number of cattle you sell per week?—It depends upon the season of the year. Formerly we did not sell so many in spring and winter, because the supply consisted principally of grass-fed beasts, which came from July up to Christmas; but of late years the extension of railways abroad, and the increased facilities of steam communication, have made a total revolution in the trade, so that now we get almost as many in winter and spring as we used to get in the summer and autumn. I will put before you a statement I took from the *Times* yesterday morning, showing that this week, to 6th of May, the importations of foreign cattle, including sheep, pigs, and calves, was 12,099 into London; whilst for the corresponding week in 1858 it was only 1,840; that is, only less than a tenth of the number. In the corresponding week of last year the number was 8,572, so that the increase in the present year has been over 4,000 head for the week. I have received on an average, between 300 and 400 beasts, and more than 2,000 sheep from abroad.

You are probably the largest foreign salesman in the market?—No: I should say there are two firms who sell as many as I do. As an individual, having no partners, I probably sell as many cattle as either of those two firms.

Has your business increased very much of late years?—Yes; in proportion to the increased numbers of cattle sent. Nine years ago there were only 1,800 head per week amongst us all; now there have been over 12,000, and my own business has increased in proportion; but I may say I had more of the 1,800 in proportion eight years ago than I have of the 1,200 now. My own business may have been doubled, while the importation has increased tenfold.

How long have you been a salesman in this market?—I have been eighteen years in this country, but before I came here I was the largest cattle dealer in Hamburg. I am a native of Hamburg, and when the tariff to England opened, I was the first of three men who commenced exporting beasts. Formerly it was the case that all the cattle were shipped from Hamburg, and they were brought there for the purpose of meeting a sale; but people opened their eyes, and they found they could do in two days what used to take a fortnight. A line of steamers was established, and the cattle were sent from various parts, by which the driving of herds long distances was saved. We still get cattle from some distant parts, but I hope they will not come any longer. I made a communication to Professor Simmonds at the Privy Council on this subject, because a question was asked in the House of Commons by Lord Dunkellin, and Lord Robert Montagu gave an answer that the late re-appearance of the cattle disease was believed to have been occasioned by a cargo of white Austrian beasts. We have reason to believe that there is always more or less a rinderpest or cattle plague in some of the countries east of Hungary.

That you would call the home of the cattle plague?—Yes; I believe many salesmen here are of the same opinion as myself on that point. I think we should give the government every assistance when we apprehend there is anything wrong, because it is better to shut up part of the continental market than the whole; and if you allow cattle to come through these districts they may infect the whole of the cattle in their course, and the importation must be prohibited entirely. The great safeguard against rinderpest in this country is the very severe and stringent measures which the foreign governments adopt for their own protection. I received

a letter this week, which I translated and sent to Professor Simmonds, stating that the Prussian government, the Bavarian government, and the government of Saxony have now totally prohibited the importation of Hungarian cattle. Professor Simmonds and Professor Browne have attended the market every day, in order that their attention might be directed to any case of disease which appears there, as it would not do for me to act as a common informer against the other salesmen. I had great suspicion that there would be 270 cattle smuggled through, and we waited for them coming in, but up to this time they have not appeared. I had a letter stating it was intended to attempt to smuggle these cattle through. The result was, in Saxony, Prussia, and Bavaria they said, "We will not allow a single Hungarian bullock to come into our country." A friend of mine, who lives at Vienna, had last week 120 beasts, and he got them as far as the Bohemian frontier by railway, and there they were stopped. These were Hungarian beasts, but they had been fattening for six months in Austria, and on that representation being made to the governments of Prussia and Saxony, they were allowed to pass. On their arrival here I showed them to the officers of the Privy Council, but they had no disease. I have no doubt there will be a good many more of these beasts come; but at present there are no cattle allowed to come from those districts which are regarded as the principal seat of the rinderpest, and such as do come are smuggled through. It was rumoured that a Polish Jew had got through the 270 beasts to which I have alluded; but I do not believe it, as, according to my advices, they would have been here by this time.

You think it unsafe to promote importation from that district?—I do not believe this Government have got the power to prohibit them; but you are protected by the other governments. There exists great jealousy in the trade. The Berlin jobbers send their principal supply from Prussia. They are jealous about the white beasts, because they lower the market. Last Monday beasts were unsaleable in the market. There were not buyers for the whole lot. There has not been such a glut of cattle for years as there was last Monday, and we are over-done just now with this particular class of meat. For fear of rinderpest the Austrian and other Governments will not allow Hungarian beasts to enter their territories, and that is a great protection to this country.

To return to your own trade—you say that now-a-days you receive a great number of these foreign cattle in the winter-time and spring. Do you attribute that entirely to the development of railway and steam-boat communication, or do you think it is in some degree attributable to the improvements in cattle-breeding and grazing on the Continent?—I attribute it chiefly to the development of railways, because we can get beasts here now which we could not get formerly. We have now regular steam communication with Sweden, and the cattle trade with that country has sprung up within the last two years. Previous to that the only communication with Sweden was by sailing-ships. There is now a line of very fast steamers, as also to the north of Denmark—Jutland. Formerly, all the cattle from those parts had to be driven to Hamburg and shipped from that port to London; now we have steamers from Denmark direct. Within the last week we had two cargoes, consisting of 200 beasts, which, two or three years ago, we should not have dreamt of getting. From Spain I am in the habit of receiving every week a cargo of 100 or 150 beasts. There are large steamers now entirely employed in the cattle trade from Geestemunde, and it is the same with Portugal. Then a fresh trade has sprung up from France. It shows how the circumstances of countries alter. I remember, seven or eight years ago, the French came over here to buy cattle—now we receive a large number of cattle from France; those from Normandy being remarkably beautiful animals, as good as any English beasts which are bought by the West-end butchers.

They are a sort of half-bred shorthorn, are they not?—You would not know them from the English beasts. If we could only exclude that corner—Hungary—where we always run the risk of disease, I think there is wonderful scope for the importation of foreign cattle.

Does not your observation with regard to France sending us cattle, instead of sending here to buy them, indicate that some improvement in agriculture must have taken place?—Yes. I believe in France it is so. Some years ago they were very short indeed of stock. The present facilities for sending cattle here, added to the inducement of high prices, have tended to increase the importation from that country; indeed I am told that cattle grazing in Normandy, paying freight to this country, will realise as much to the farmer as he would get by sending them to Paris and paying the duty.

Professor WILSON.—That observation has equal bearing with regard to France, Sweden, and Denmark.—It is, no doubt, the fact that cattle intended for our market are cared for and fed differently to what is the case for those designed for home consumption, because inferior beasts, they know very well, will not fetch good prices in this country, and it does not pay them to send them here. At the same time I do not think they are advanced in agriculture sufficiently to supply us to a very large extent at present with well-bred and well-fed stock; but that they are greatly improving in this respect there can be no doubt, and it is their policy to do so.

Mr. LUDFORD WHITE.—Do you not consider that the high price of meat in this country of late years has been a great incitement to the exportation of cattle from the continent?—No doubt, but there has been a great deal of money lost lately by the foreign dealers. We had high prices last year; people abroad thought we had no cattle left, and all that sort of nonsense. The cattle I am selling now were probably bought in as store stock last November, and they are sold by live weight. Cattle feeding is done on a very large scale abroad—not like the little farmers here, with 20 or 30 beasts each. If you go into the district of Magdeburg you will find 400 to 500 beasts on one estate. If you ask how much per head for them, they will tell you, "These beasts cost me so much per head alive; so and so are my terms." If you do not like the price they will wish you "good morning." Then the jobbers will go and offer an advance of so much per cent., and this year, I have no doubt, some of them will be ruined. I believe some of them gave more for the cattle they bought in last November than they could sell them for since. Last year mutton made 6s. per stone, which is now selling at 4s. 8d., or 7d. per pound instead of 9d.

The CHAIRMAN.—Then I think I am right in the assumption I started with, that the increased importation of foreign stock is, in a great measure, due to the improved agriculture of those countries?—No doubt to a great extent it may be so. I would say this—first of all we have cattle in the winter from countries from which we formerly received none, because there were no facilities for conveyance; but when people find a market open to them they naturally try to increase the quantity, and to improve the quality of their stock; and no doubt they have gone on improving their stock very fast. They imported hundreds of bulls and rams from this country for the sake of improving their breeds of stock, till the cattle-plague came amongst us; since then all importations from England to the Continent have been prohibited. One country is afraid of the other. You could not possibly send a bull or a ram to these countries now, if you paid ever so much money to do it. I have myself a fine herd of pedigree cows in this country. I have never had the disease amongst them, notwithstanding I had foreign sheep located not far from them, and on one occasion some of them broke through the hedge, and got amongst the cows. I have got these cows now, and I cannot send one of these to the Continent. The foreign breeders would improve their stock most by improving their blood.

Professor WILSON.—They are all striving for that; but it will be years, probably, before they will take any more stock from England for breeding purposes.

The CHAIRMAN.—Is it your opinion that the continental farmers are desirous of improving their stock, and the system of feeding their cattle?—No doubt about it; farming property abroad is at least double the value it was.

Mr. LUDFORD WHITE.—And you believe the supply to be illimitable?—If you go to these countries and see the amount of stock they have left, the supply may be said to be almost unlimited; because look at the extent of grazing country they have. Gentlemen travelling through Germany must have seen the vast tracts of fine meadow land, which are capable of being mowed two or three times a year for hay, and then leave fine pasturage. You do not see such meadows in Leicestershire or Nottinghamshire, only in Holland and Germany.

Professor WILSON mentioned that he was in Jutland last year, and he was assured, on the most unquestionable evidence, that they could supply this country with 40,000 cattle per annum with the greatest ease. Last year they exported 39,000 head of cattle, and they could increase that number by 10,000 a-year for almost any time to come. He had no doubt that was quite within the mark of the capabilities of that country. In addition to which, they could send us 3,000 or 4,000 tons of oil-cake annually to feed our own cattle upon.

Mr. WARE.—In what condition do the foreign cattle come to the market as compared with the English?—Generally speaking, in very good condition, because it does not pay a man to send a bad quality of stock to our market; whether an animal fetches £10 or £30, there is the same expense of conveyance, &c., and no one dreams of buying foreign cattle for store. When a middling animal is slaughtered, it is sold at a low price, and the same may be said of all cattle which have been fattened after having been worked at ploughing. They are very fat inside, but they do not make good meat.

Do they suffer much from the voyage?—That depends upon the weather and the accommodation in the steamer. I believe there has been a wonderful improvement in this respect. I was examined on this subject before the Committee of the House of Commons in connection with the Bill of the Harwich Steam Company. I believe the shorter you can make the sea passage the better it is for the animals. I give a perfectly unprejudiced opinion on this matter, as I am not connected with any railway or steam-boat company, and, as I have generally something to do with every cargo of cattle that comes to London, I may be considered a fair judge. I have found that when a cargo of cattle from Hamburg arrives at Blackwall, which is the nearest point for landing, as soon as the steamer slackens speed, to come to her moorings, the current of air into the hold is so much decreased that the animals begin to suffer greatly from the heat. In weather like this it would be a dangerous thing to slacken speed at Gravesend, but they must gradually slacken speed in coming to an anchor in the Thames. In hot weather the animals come from the lower hold in a very distressed condition, and it always is a great point to get them landed as soon as possible after their arrival. On the passage the hold is supplied with air by wind sails carried down the hatches, and as these steamers run at a speed of ten miles an hour a considerable current of wind is driven down the hold. It is of the first importance that the cattle should be removed from the steamer immediately on their arrival at Harwich, and then sent by rail, as by that means a saving of 10 or 12 hours is effected in bringing them to market.

Professor WILSON.—Have you seen the new steamers which have been put on the Baltic line from Hamburg and Denmark to Leith?—No, I have not.

Professor WILSON.—In those steamers every provision and precaution is made for the accommodation and comfort of the animals conveyed in them, and the percentage of waste which the cattle sustain is very

small indeed. The whole of the arrangements on board are of the most excellent description, and the animals are landed immediately upon their arrival.

Mr. GERHARDT—As being a large representative of the foreign cattle trade, I considered it my duty to state my views on this subject before the Committee of the House of Commons, and I have expressed my opinion that the sea passage should be as short as possible, and that the animals should be released from the vessel as soon as possible after arrival. The principal trade in cattle lies in the hands of the General Steam Navigation Company; but they have only one wharf at Blackwall, which is not suitable for a trade like this, as there is not half room enough, and there is no proper accommodation for the cattle on their being landed there. They have sometimes to remain there all night if the steamer arrives too late for the cattle to be sent away that day. You do not know the mischief that is done to the animals. When the cattle are landed and sent away immediately after their arrival, they are generally in such a condition you would hardly think they had been 48 hours at sea.

Mr. LUDFORD WHITE—Which do you consider affects the cattle most prejudicially, the journey by sea or by railway?—That by sea, undoubtedly. On the railway they have plenty of air and sufficient room. The overcrowding of the cattle on the railway is provided against. They only carry a certain number of animals in one truck. I have had hundreds of cattle consigned to me, which came up from Harwich by the Great Eastern line, and I do not allow them to be unfairly loaded, but whilst they are in the hold of the vessel they are beyond my control. The regulation as to the number of cattle which a steamer should be licensed to carry would hardly meet the case, inasmuch as a steamer which could accommodate 200 Jutland cattle could not stow 150 of the larger breed of animals which come from Magdeburg and other parts of Germany. Facilities of traffic are best promoted by competition in the trade—railways against steamers, and steamers against railways—and the dealers will always find out which is the best way of sending the cattle.

The CHAIRMAN.—I will ask you, supposing there should be a market established, say at Thames Haven, with suitable slaughter-houses, for the slaughtering of all the foreign cattle at that or some other spot near, so that these animals might be excluded from the Metropolitan Live Cattle Market altogether, do you think such an arrangement would tend materially to reduce the supply sent to this country?—A very great deal; in fact it could not be done. If it were tried I am sure it would have to be given up. Imagine a day like this—[referring to the heat]. We are only now at the commencement of summer. You slaughter the animals at Thames Haven, and by the time you get the meat into the salesmen's shops at the market how much do you think would be fit for consumption? It might answer better in winter, but even then it would place restrictions upon the trade which would be most undesirable. Practically it could not be done, I am quite convinced. You must understand that the meat trade in London is not all carried on by the carcass butchers. A large number of beasts are killed by the retail men, from which they derive a considerable portion of their profits in the sale of the offal. It is calculated that the retail man is able to make 15s. or £1 more of the offal of a bullock than the carcass butcher can do, who has to sell it to wholesale dealers in the same way to be retailed by them. In summer time the small retail butchers would not kill a bullock or a sheep till late at night, so as to have it fresh for his customers in the morning. Imagine such a supply of foreign stock as we had last Monday, when there were 2,430 beasts and 8,666 sheep in the market; how is it possible any man should know what quantity he should kill? Besides, if I were a retail butcher, and I were in my shop, I should know I wanted a bullock to be killed for the supply of my cus-

tomers. I could have it killed at the time I wanted it, to suit my trade. But if I am a carcass butcher, if I kill 20 beasts and only 10 are wanted, I have 10 left on my hands; if, on the other hand, I only kill 20, and 40 are wanted, I am 20 short in the supply I require. How can you possibly regulate the supply in that way?

The CHAIRMAN suggested that the telegraph might be employed for the purpose. The distance to Thames Haven was not great, and there was direct communication with London.

Mr. GERHARDT—Yes; but the retail butchers would not go in the evening, and say to the carcass butcher, "I shall want a carcass to-morrow morning." The consequence would be some parts of London would be partly without meat, and some parts would have three times more than was wanted. The foreign cattle constituted at least one-half of our supply at present, and it was in much larger proportion than that during the cattle plague.

The CHAIRMAN—You suggest that if the system of slaughtering the foreign cattle at Thames Haven were adopted London would be sometimes deprived of half its proper supply of meat, and at other times the markets would be glutted. Have you ever found that to be the case at present?—We find sometimes the prices are fabulous, and sometimes they are equally low, because the supply has been in excess of the requirements. The place of slaughtering which you suggest might be available to some extent in the winter time; but in summer it would be quite impossible to use it. It would be the very thing, in my opinion, to restrict the importation of foreign cattle.

The CHAIRMAN—I did not suggest that the system should be limited to one place; besides Thames Haven, you might do it at Southampton and Leith?—It might be done in places of 10,000 to 20,000 inhabitants, but to attempt to feed three millions of people in this artificial way could never be done, nor do I see any good that could arise from it. You bring the beasts into London, but none are allowed to go out again. You can make yourselves safe against the cattle plague, first, by not allowing any cattle to come in from the countries which have got it.

The CHAIRMAN—But you cannot always tell where the cattle comes from?—The governments abroad assist you, because they will not let them come into their country. They have had the plague in Holland, and we have not had a bullock from there. You can stop them at the wharf; and if they are brought into market they can be stopped there.

The CHAIRMAN remarked, unless something of this sort were done, there was no probability of getting rid of the cattle-plague in London.—My second proposition is that every animal should be inspected on its arrival here; and let every animal be killed within a certain time, which is the regulation at the present time. With regard to the disease that has lately broken out at Limehouse in a cowshed, I do not find that it can be traced to any foreign beasts.

The CHAIRMAN—This Committee has been appointed for the purpose of inquiring into the means by which the supply of meat to this country can be increased, and the price cheapened; and you are of opinion that there is immense scope on the Continent for increasing the supply; and that as the facilities of transit are enhanced the development of the foreign cattle trade will continue to progress?—Yes; no doubt; if you do not clog the trade with unnecessary restrictions. You have a still better remedy against the cattle plague. There might be a separate market for foreign live cattle, away from the other; they need not mix with the English beasts; and as they left the market only to be killed, they would not take the disease into the country. I think you have the remedy entirely in your own hands, in the way I have suggested. Farmers in the country can send their cattle to other markets in the country without sending them to London at all;

though the Metropolitan Market is always considered to be the best.

The CHAIRMAN—The Metropolitan Market is, no doubt, the great market for live cattle, and in course of time you might develop another permanent market; but at present there is no other market at which you can sell the quantity of cattle you can sell here?—No; but at present the farmers in the country have the opportunity of sending their cattle to the provincial markets without their coming to London at all. Those northward of London have the Hitchin market.

If a person required foreign cattle, why should he not go down to Thames Haven to buy them?—You must make a complete revolution in the trade; because the retail men, who sell their two or three beasts per week, would be brought into the position of mere meat-dealers, and it would involve a loss to them of 15s. or £1 in the matter of the offal. In the case of the contracts for the supply of meat for stores for troops and the navy at Deptford, the contractor is obliged to dispose of his offal wholesale; but the retail man makes a considerable profit by the retail of the offal; and, as I have said, I do not know how this slaughtering at the place of debarkation could be carried on at all in the hot weather of summer. The great secret is, in summer time, to kill the meat as late as possible, so as to give it time to "set" before it is taken to market. I have seen a great deal of meat that has come from Thames Haven stopped as unfit for food, and if it had not have been stopped no respectable butcher would have bought it. The meat sent from the country in quarters is packed in cloths and hampers; but it would be impossible to do that with the quantity required for the metropolitan market.

But it comes in that way from Aberdeen?—That is nearly all sent by private butchers. It does not come from any abattoirs. With regard to the danger of cattle plague, if you bring the cattle to Harwich to be killed there, you might as well bring them to London. The best thing the Government did, in my opinion was to drive every cow out of London, for the cowsheds are the hotbeds of disease. For my own part, I would not allow a single cowshed in London, as the system of keeping and feeding is altogether bad, and the danger of the spread of cattle disease is greatly increased by that means. I consider it would be a great advantage that cows should be kept in the country, inasmuch as if the animals are properly fed, the whole of their food is produced in the agricultural districts; and roots, as well as hay and grass, where they are grown, must all be brought up from the country. I think there ought to be legislation on the subject of the London cowsheds. If there were no cows kept in London for milking purposes, even if the plague was brought into London by foreign cattle, it would do no mischief, because there would be nothing to catch it, whether the cattle were brought from Harwich or Thames Haven.

Mr. LUDFORD WHITE—Would it not increase the price of milk in London to abolish all the cowsheds?—No; the cows would be kept near London, and on the spot where the food is produced. The principal portion of the London supply of milk comes from the country now.

In reply to further inquiries, Mr. Gebhardt expressed his opinion that the dead meat trade from the continent might be developed in the winter. All the objections he had stated applied principally to the hot period of the year; but he had seen beef, even in winter, in such condition that one would not like to eat it, and when wetted with sea water it very soon became in a bad state; and large quantities had been condemned at Blackwall. The value of the offal of a bullock in good condition, including the hide, was from £3 5s. to £3 10s., and the depreciation upon that according to the circumstances of having a retail market or not for the edible portions, generally purchased by the poorer classes, was from 15s. to £1. The tongues were sold wholesale at 8s. 6d. each, but if he wanted to buy one he must give 5s. for it. He believed no foreign beef was bought by

the principal West-end butchers, except sometimes the very best quality of French beasts, and they must be very choice for the West-end men to buy them. The foreign meat principally goes to supply contracts for the army and navy, and a great many are disposed of to the carcass and retail butchers of Whitechapel and other portions of the east of London. At last Monday's market the best price was 4s. 10d. a stone, and some was sold at 4s.; the average price of the market was 4s. 6d. per stone. The cost of transit of cattle from Hamburg is about £2 per head; from Berlin £3, and from Vienna £4 to £5 per head. The concession to the consignee is about 5s. 6d. per head, which includes the market charges. It was impossible for him to say at what cheaper rate the foreign producers could raise their stock as compared with the English farmer; and unless prices kept up, money would be lost upon store stock bought at high prices last autumn. Many graziers had sold their stock when fat at almost the same price which they gave for them as stores; and this remark equally applied to sheep.

CANTOR LECTURES.

"ON POTTERY AND PORCELAIN." BY W. CHAFFERS, Esq.

LECTURE VII.—MONDAY, MAY 20.

ENGLISH PORCELAIN.

The subject of Mr. Chaffers' concluding lecture was English porcelain. He began by observing that the invention of the manufacture of porcelain in this country was much earlier than had been generally supposed; for a patent was taken out by John Dwight, of Fulham, in 1671, while that of Chicagneau, of St. Cloud, in France, was not granted until 1702, nearly thirty years afterwards. The first discovery in that country was accorded to Louis Poterat, of Rouen, who obtained letters patent in 1673, but the ware never succeeded, and only a very imperfect description of china was produced; Dwight's porcelain was therefore made two years previously, and the words of his patent are these:—"For the mystery of transparent earthenware commonly known by the name of porcelane or China." The fact is corroborated by Dr. Plot, in his "History of Oxfordshire," written in 1677, who says—"He" (Dwight) "hath found ways to make an earth white and transparent as porcellane, and not distinguishable from it by the eye, or by experiments, that have been purposely made to try wherein they disagree." The principal test of porcelain being its transparency, there can be no doubt about the nature of the ware here spoken of. A specimen of his porcelain, of about 1735, has recently been discovered; it is a bust of George II., of small life-size, in porcelain, which, from the peculiar modelling, and the similarity to Dwight's busts in stoneware, leaves no doubt of its origin. It is in the possession of Mr. Reynolds. The manufactory at Stratford-le-Bow was established about 1730. Thomas Frye, an eminent painter, appears to have been instrumental in bringing the china to that perfection for which it was celebrated. In 1753 the works passed into the hands of Messrs. Crowther and Weatherby. In an interesting document, accompanying a Bow china bowl which was presented to the British Museum by the painter himself, we are told that they employed 300 persons; about 90 painters and 200 turners, &c., all under one roof. In 1775 the Bow works were sold to Mr. Duesbury, and all the moulds and implements transferred to Derby. [Several specimens of Bow and Chelsea were exhibited.] The celebrated manufactory at Chelsea was established about the same time as Bow, and the early productions are frequently mistaken the one for the other; but, fortunately, the finer pieces are usually marked with an anchor in red or gold. The period of its greatest excellence was from 1750 to 1765. It has been thought that Venetian workmen were first engaged here, from the great similarity of the two wares both in painting and gilding, added to which the mark

upon both is an anchor. This manufactory was set on foot by Mons. Spremont, a Frenchman, and he acquired a great fortune. The beautiful vases in the French style of groseille and morone, with beautiful paintings, are well known, and are at the present day much appreciated, the prices they command being as high as are paid for the Sèvres porcelain. These works were also bought by Mr. Duesbury, of Derby, in 1769, who continued them at Chelsea until 1784. The china made by him was called Derby Chelsea, and is known by the mark of a D, crossed by an anchor. Although the Derby works originated as early as 1750, it does not appear that any china of a high character was produced, but principally services and small chimney ornaments; and it was not until 1769, on the purchase of the Chelsea works, and a few years after of those at Bow, that they rose to any importance. In fact, with the best workmen and painters of those great establishments, and all the moulds and models from them, the Derby manufactory may be considered as the Bow and Chelsea manufactories continued in another locality. Some beautiful examples of porcelain in the Chinese style were produced, and they seem also to have copied their marks, as well as their style of decoration; but their ordinary trade mark was at first a D crossed by an anchor, called Derby Chelsea, and after Royal patronage was accorded, in 1780, it was changed to a D surmounted by a crown—this was called Crown Derby, and was used by the successor, Mr. Bloor, down to 1830. The works ceased in 1848. The next porcelain manufactory of importance was Worcester, established chiefly through the exertions of Dr. Wall, who formed a company in 1751. The services made here were held in much estimation, and although produced at a cheaper rate than Bow or Chelsea china, were better for use, and not so subject to crack with hot water. An important means of decorating porcelain was introduced here in 1759, by transferring impressions from engraved copper plates on to the surface of the ware. It was adopted almost simultaneously with Liverpool, the invention being claimed by both, and specimens of these productions are found bearing the names of Sadler and Green, of Liverpool, and Richard Holdship, of Worcester, dated in the same year. Bat-printing succeeded the printing from copper plates on paper; the impression being taken from a copper plate by a piece of glue (called a glue bat), which received the pattern on its surface in oil, and being pressed on to the surface of the ware, the design was transferred; it was then dusted with colour and baked. The porcelain made from 1760 to 1780 was of a superior quality, and the colours used on decorative pieces approached very closely to those of Chelsea. In 1783 the manufactory was purchased by Mr. Flight, afterwards Flight and Barr, and many clever artists were engaged; it remained with them and their successors until 1840, when the two principal manufactories of Worcester, Messrs. Flight and Barr, and the Messrs. Chamberlain, were amalgamated, the concern taking the name of the latter. Chamberlain's works were established in 1786, and acquired a great reputation, being especially patronised by the Prince Regent, for whom they made a service which cost £4,000. Another full service for the East India Company at Madras was supplied at a still higher price. The taste for gilding and bright colours caused this great increase of price, for it appears that nearly £1,000 per annum was paid by the firm for gold alone. Caughley, near Broseley, Shropshire, was celebrated for porcelain. Mr. Turner, an engraver, from Worcester porcelain manufactory, made great advances, especially in services for the table; he invented a beautiful blue, which was printed on the ware in Chinese designs. The well-known "willow pattern" was produced here in 1780, which, even at the present day, is in great demand; this was the first blue printed table service made in England. The porcelain manufactory of Nantgarw was established by a Mr. Billingsley, in 1813. He had some time before produced his beautiful transparent ware at Pinxton, but its expensive character prevented it from

becoming successful, and it was abandoned; he, however, revived it at Nantgarw, and it was so much admired that Mr. Dillwyn, of Swansea, made arrangements with Billingsley to superintend the production of it there also. Nearly all the ware made at Nantgarw was purchased in the white by Mortlock, a china-seller of London, and decorated in the metropolis. The favourite patterns at both the above-named places were pink roses heightened with gold. Mr. Rose, of Coalport, was a celebrated potter, and he established himself there about 1780. He was not, however, contented with such limited operations, but as the Caughley, the Swansea, and the Nantgarw works were successively relinquished by their owners, he became the purchaser, and incorporated them with his own, retaining Billingsley as director of his manufactory. The patterns known as the "worm sprig," the "Tournay sprig," the old "willow pattern," and the "blue dragon," remained staple articles. His decorative porcelain he marked "Coalbrookdale," which was another branch of his Coalport works. William Cookworthy, the inventor of hard porcelain, commenced his experiments as early as 1758, but it was not until 1768 that he considered it fully developed, and in that year, in conjunction with Lord Camelford, he took out a patent and commenced operations at Plymouth. The materials employed were called growan stone and growan clay, which answered to the ingredients of the Chinese porcelain, *kaolin* and *petuntse*. The difficulties found in proportioning them properly, so as to give exactly the necessary degree of vitrification and no more, and other niceties with regard to the manipulation, discouraged them in their proceeding in the concern, and, after expending on it between two and three thousand pounds, they sold their interest in the patent to Mr. Champion, of Bristol. The works were, however, carried on for nearly six years, and a considerable amount of ware was produced. Cookworthy engaged the services of a clever French artist, who produced the articles modelled in the form of shells and rock work, which became great favourites for the table. In 1774, the patent was sold and transferred to Mr. Richard Champion, of Bristol. He made some beautiful ware, but the great outlay prevented it being remunerative, and in three or four years he was compelled to give up the manufacture, and sold the patent to a company of Staffordshire potters. Various other porcelain manufactories were described; among these the New Hall China Works at Shelton, the first of the kind in Staffordshire. They had purchased Champion's patent, intending to make hard porcelain, but in a short time this was abandoned, and they made the usual English soft paste china, in which a great proportion of bone dust was mixed. The important china works at Stoke-upon-Trent originated with Josiah Spode in 1780. Great improvements were made by him and his sons in the composition of porcelain, and they introduced a fine and durable material called iron stone china, which was largely exported to France, to the great injury of the French trade. The Prince of Wales visited the works in 1806, and he appointed Spode potter to his Royal Highness. About 1827, Messrs. Copeland and Garrett succeeded, the works being still carried on by Mr. Alderman Copeland, and the choice pieces which emanate from this establishment vie with the famed *pâte tendre* of old Sèvres, while the jewels which glitter upon it remind us of the lines in Shakespeare about gilding refined gold or painting the lily. On others the exquisite paintings are veritable works of art, and the beautiful bisque figures are unapproachable. Mr. Thomas Minton established works at Stoke-upon-Trent in 1790. He made porcelain in the Worcester style and realised a handsome fortune. He died in 1837, and was succeeded by his son, Mr. Herbert Minton, who attained great celebrity as a potter, and brought the ware generally to great perfection. He revived the manufacture of encaustic tiles, and by employing the most expert artists, the most skillful chemists, and sparing no expense in his

numerous experiments to improve the colours, the body of the ware, and the decorations, he stood unrivalled in his art. His successors, Messrs. Michael Dainty Hollins and Colin Minton Campbell, have pursued the same course, and with untiring energy and zeal seconded all his efforts. Mr. Chaffers remarked that England has indeed reason to be proud of the rival potters, who have furnished forth their specimens of porcelain to the Paris Exhibition of 1867. Only two have exhibited, but the names of Minton and Copeland have added lustre to the English potters' art, and have borne away the palm of victory. Mr. Chaffers had on the table some fine specimens of the beautiful china produced at Rockingham by the Messrs. Brameld, from the year 1820, under the protection of Earl Fitzwilliam, the owner of the estate at Swinton. The china was of a superior description, and the painting and decoration generally of the highest order. The manufactory was discontinued in 1840. The important manufactory of porcelain at Lowestoft was established about 1756, and it is remarkable that the recollection of its existence, and the productions which emanated from it, should have been lost sight of and gradually died away, although it was in active work for nearly fifty years, and only ceased in 1802. But although this is the case at a distance from the locality, it is well remembered by the older inhabitants of Lowestoft, and the houses in the vicinity are teeming with its china. In fact, it is to be found all over England, but is usually, for want of a truer name, called Oriental, being a sort of hybrid ware, which nobody who knew what real Chinese porcelain is could for a moment mistake. The painting on the ware, too, is undoubtedly English, and the very touches of the artists can be identified. Its greatest prosperity was from 1770 to 1800. The question about hard paste being made at Lowestoft is placed beyond dispute; it was probably introduced about 1775 after Champion's failure. There are several persons now living who can testify to the fact that no Oriental porcelain ever came into the factory to be decorated; yet this is the opinion of many who have not duly considered the matter, and who imagine that what is now called Lowestoft was actually Oriental china, painted only at that place. Mr. Chaffers referred those of his hearers who wished to judge for themselves to a large collection of Lowestoft china, which he had obtained from the gentry of the vicinity, and which was now exhibited in the South Kensington Museum.

The CHAIRMAN said this lecture closed the Cantor Lectures for the present Session; and he felt sure that he expressed the sentiments of all who had heard Mr. Chaffers' course, when he said they were deeply indebted to that gentleman for the large amount of information he had brought before them. The lectures had been made additionally interesting by the very numerous and valuable specimens which Mr. Chaffers had been enabled to place before his audience, illustrating the various manufactures referred to in the lectures. In the name of the audience, he begged to tender their thanks to Mr. Chaffers.

THE ROYAL ALBERT HALL OF ARTS AND SCIENCES.

The first stone of this hall was laid by Her Majesty the Queen, on Monday morning last, on the site, north of the gardens of the Royal Horticultural Society at Kensington. Her Majesty, accompanied by the members of the Royal Family, arrived at half-past eleven, and was received by His Royal Highness the Prince of Wales, the Chairman of the Provisional Committee, and the Duke of Edinburgh. The Prince of Wales read the following address:—

"May it please your Majesty,—

"The report which, as President of the Provisional Committee of the Hall of Arts and Sciences, I have the honour to lay before your Majesty will be found to con-

tain a brief outline of the origin and progress of the undertaking to the present time.

"It is not necessary for me to remind your Majesty that the building of which you are graciously pleased to lay the first stone to-day is one of the results of the Exhibition of 1851, and that it forms a prominent feature in the scheme contemplated by my dear father for perpetuating the success of that Exhibition by providing a common centre of union for the various departments of science and art.

"I cannot doubt that to your Majesty the events of this day, with their manifold associations, must be full of mournful interest. For myself, I need not say that, sharing these feelings, it is also with gratification that I find myself co-operating in the endeavour to give effect to a plan which had commended itself to the judgment of my father.

"Your Majesty's presence to-day will be the best encouragement to us to persevere in the work, and render it in all respects worthy of the object for which it is designed."

To this Her Majesty made the following reply:—

"I thank you for your affectionate and dutiful address. It has been with a struggle that I have nerved myself to a compliance with the wish that I should take part in this day's ceremony; but I have been sustained by the thought that I should assist by my presence in promoting the accomplishment of his great designs to whose memory the gratitude and affection of the country are now rearing a noble monument, which I trust may yet look down on such a centre of institutions for the promotion of art and science as it was his fond hope to establish here. It is my wish that this Hall should bear his name to whom it have owed its existence, and be called 'The Royal Albert Hall of Arts and Sciences.'"

The report referred to by his Royal Highness was then handed to her Majesty. It is in these terms:—

"May it please your Majesty,—We, the provisional committee appointed by the promoters of the Central Hall of Arts and Sciences, and now acting under your Majesty's Royal Charter of the 8th April, 1867, humbly beg leave to submit to your Majesty the following report of the circumstances which led to the present undertaking, and of the steps we have taken in virtue of the powers entrusted to us.

"After the close of the Great Exhibition of 1851 representations were made to your Majesty's Commissioners for that Exhibition from chambers of commerce, learned societies, and other bodies interested in science or the arts, of the want that was felt throughout the country of a central institution in London for the promotion of scientific and artistic knowledge as applicable to productive industry. Your Majesty's Commissioners, being impressed with these representations, announced in their second report to your Majesty that they had devoted the surplus funds of the Great Exhibition to the purchase of an estate at South Kensington with a view of providing a common centre of union for the various departments of science and art connected with industrial education.

"After the purchase of this estate, numerous plans for effecting the contemplated object were prepared, under the immediate direction of your Majesty's lamented Consort, the president of the Royal Commission, in all of which a central hall formed a prominent and essential feature.

"The untimely death of the illustrious Prince led, in conjunction with other causes, to the suspension of the steps necessary for carrying into effect the comprehensive scheme contemplated by his Royal Highness and your Majesty's Commissioners.

"An advance, however, has been made towards its realisation, by the establishment of the South Kensington Museum, and of the Royal Horticultural Society, on the estate purchased by the Commissioners. A large portion

of the estate has also been made available for purposes connected with the objects of the purchase, by allowing its occupation by the buildings of the International Exhibition of 1862; and a part of those buildings now contain the second of the series of Exhibitions of National Portraits which it is proposed to hold there, besides affording space for a large collection of models of naval architecture.

"It will be in the recollection of your Majesty that the committee named by your Majesty to advise your Majesty on the subject of a national memorial to the Prince Consort, recommended the erection of a hall on this spot as a fitting portion of that memorial, and the Commissioners expressed their willingness to give effect to that recommendation by the grant of a site.

"Designs for a personal monument and a hall of art and science were accordingly submitted to your Majesty. It was found, however, that the available funds would not be sufficient for the execution of the double object, and your Majesty, acting under the advice of the committee, determined to appropriate the whole sum to the one object of the personal monument in Hyde-park now in the course of construction, opposite the site on which the hall is to be erected.

"The intention of constructing the hall, however, was not abandoned; and in the year 1865 many of those who had taken a deep interest in the Great Exhibition of 1851, and in the success of the further plans arising out of it, formed themselves into a committee to consider the readiest mode of obtaining the means of erecting this hall. The Royal commissioners lent their willing co-operation, promising the free grant of a site valued at £60,000, and further agreeing, on certain conditions, to advance the sum of £50,000 towards the cost of the hall.

"On the 6th July of that year a general meeting of the persons interested in the undertaking was held at Marlborough-house, at which we were appointed a provisional committee, with full powers to adopt such measures as might appear to us best calculated to carry the proposed undertaking into effect, his Royal Highness the Prince of Wales accepting the office of president. Your Majesty's gracious patronage was at the same time vouchsafed to the undertaking.

"Acting upon the powers thus conferred upon us, we took steps for obtaining subscriptions, and in the course of last summer the sum subscribed had reached the amount of £112,000. The monetary panic which occurred about that time made it then expedient, in our opinion, to suspend our efforts in this direction.

"The other preliminary steps necessary for the prosecution of the work were, however, actively proceeded with. A design sketched for the hall by the lamented Captain Fowke, was worked out by Lieut.-Colonel Scott, of the Royal Engineers, assisted by the advice of a scientific committee of architects and others, and was finally approved by us.

"At the same time an offer was made by Messrs. Lucas, the eminent builders, and accepted by us, which provided the remaining funds and secured the completion of the building within the original estimate of £200,000.

"The excavation of the foundation was at once commenced, and we felt ourselves in a position to announce to the public the beginning of the work, and to make the application to your Majesty, which met with your Majesty's gracious acquiescence, that your Majesty would be pleased to lay the first stone of the proposed hall in person.

"We beg humbly to submit to your Majesty plans showing both the external elevation and interior arrangement and decoration of the hall.

"We are convinced that by the erection of this central hall we are supplying a great public want, and acting strictly in accordance with the enlightened views of your Majesty's Illustrious Consort, and of the commission of which he was the head.

"It is our grateful duty, in conclusion, to return to your Majesty our humble thanks for the marks of your

Royal favour at all times extended to us in connection with this undertaking, for the grant of your Majesty's Royal Charter of Incorporation, for your Majesty's liberal subscription towards the funds of the hall, and for your auspicious presence on this occasion. We would venture to hope that a continuance of your Majesty's support may be vouchsafed to us in the further prosecution of a plan destined, as we confidently trust, to prove of lasting benefit to the interests of science and art, and to add to the enjoyment and instruction of large numbers of your Majesty's subjects."

Her Majesty then left the Throne, and went towards the foundation stone, which was of red polished granite, and bore, in gold letters, the following inscription:—

"This stone was laid
by her Most Gracious Majesty
QUEEN VICTORIA,
May 20th, 1867."

The various coins of the realm, and an engrossed scroll, containing a description of the undertaking, having been handed to her Majesty by the Earl of Derby, Lord Granville presented the vase in which they were to be enclosed. The Queen placed the coins and the scroll in the vase, and closed it. By her Majesty's orders Lieut.-Colonel Scott, R.E., director of the works, laid the vase in the cavity. Mr. Lucas, the builder, then presented to the Queen a gold trowel, having first placed some mortar on the four corners of the lower stone. The Queen, after spreading the mortar, gave the word, and the corner stone began to descend into its place, amid a flourish of trumpets and a Royal salute. The Queen, with a plummet and line, tested the accuracy of the block's adjustment, and, striking it with an ivory hammer, declared it "well and truly fixed," amid loud cheering. The Archbishop of Canterbury then offered up a short prayer, and the band and chorus of the Royal Italian Opera performed a composition by the Prince Consort, entitled *L'Invocazione all' Armonia*.

The Hall of which Her Majesty has laid the foundation-stone is to be available for the following objects:—Congresses, both national and international, for purposes of science and art; performances of music; distributions of prizes by public bodies; *conversazioni* for the promotion of science and art; agricultural, horticultural, and industrial exhibitions; and displays of pictures and sculpture.

The central portion of the Hall will be occupied by an arena of 100 ft. long and 65 ft. wide, measured on the diameters of the oval. It is intended to use this arena for an audience during orchestral performances, when it will contain 800 or 900 persons, to be admitted by payment or by tickets granted for the occasion. At other times it will be a promenade, or be used for exhibitions of flowers, sculpture, or the industrial arts. Above and around the arena will rise the amphitheatre, extending over four-fifths of the oval in a gradually increasing curve of ascent. Each step or bench will be three feet wide, and the whole will be seated with comfortable chairs. The freeholds of these sittings are to be sold to subscribers for £100 each sitting. The sittings themselves will be transferable by sale or otherwise, or the right of occupying them may be sold either for a period or any particular occasion. In all, there will be about 1,720 of these amphitheatre sittings, and of these 360 can be converted if necessary into box sittings. The remaining part of the oval will be occupied by sittings for an orchestra of 1,000 performers, and by a very fine organ, to be built by Mr. Willis, the maker of the organ for St. George's Hall, Liverpool. Above the amphitheatre again will rise two tiers of boxes. Those in the lower tier are each to contain ten persons, and are to be sold for £1,000 each; those in the upper tier will contain five persons each, and are to be sold at £500 the box. The boxes will be, like the sittings, transferable, and each of them will be provided with a small room behind it. There will be 43 in the principal tier,

and 86 in the upper. The provisional committee have proceeded on the principle of retaining full powers for the shareholders over those portions of the Hall which can be used for exhibitions or for other purposes connected with the objects of the undertaking. No seats will be sold which in any way interfere with the various purposes for which the hall is intended. Above the boxes will be a corridor, 21 ft. wide, which is to be fitted with movable seating. This arrangement will allow it to be used for a sitting audience, a promenade, or exhibition space. It will give space for seating 2,700 persons. The wall of the corridor may be considered to bound the hall proper, and from wall to wall on the longer diameter of the oval it will measure 230 ft., and on the shorter, 180 ft., which enormous stretch is all to be covered in with a roof in one span, resting on piers, between which the spectator in the hall will see the architectural features of a top-lighted picture gallery and promenade running completely round the hall. This gallery would also be available for a seated audience on great musical festivals, and will conveniently accommodate 1,000 persons. The total number, therefore, that could be conveniently seated in the building will be 8,000, including the orchestra, and if of these the provisional committee have to sell only 2,000, as the statement put forth by them implies, there will be no less than 6,000 sittings for *entrepreneurs* using the hall. From the top of the piers which separate the upper galleries from the main body of the hall the ceiling will rise in an elliptical curve to the great central skylight, both ceiling and skylight being suspended from immense wrought-iron arched ribs or girders. The total height from the floor of the arena to the skylight will be 135 feet. Commencing to work downwards from the upper gallery there will be immediately below it numerous offices, rooms for societies using the hall, and refreshment and promenade rooms, and extending from the general contour of the hall there are to be over the entrances on the one side a lecture theatre, and on the other a small concert room. Below this floor will be the crush rooms, which are to give admittance to the corridors surrounding the boxes, and also to the galleries. Behind the orchestra, at the ground level, and also on a level with the lower tier of boxes, will be long refreshment and promenade rooms. The basement will be occupied with the kitchen, stores, &c., so arranged that the lifts from the kitchen will pass through all the refreshment rooms on the three floors above.

The arena is to contain 800 to 1,000 people. There are to be four staircases on the south-east and south-west side, and two on the north side, or a staircase for every 166 persons. There will be also six staircases to the box tiers, besides an entrance from the conservatory of the Royal Horticultural Society, where there will be two flights of steps, making in all eight staircases for 860 people, or a staircase for every 108 people. To the lower gallery, which will be occupied by persons admitted for comparatively small payment, there are six staircases, 6 ft. 6 in. wide, for 2,700 persons. The upper gallery is to be provided only with two staircases 6 ft. 6 in. wide, but space is to be left for additional staircases in case of their being required. The amphitheatre sittings will be entered from the level of the ground in Kensington-road. The means of egress are to be very ample. Counting two entrances to the corridor of the Horticultural Society, from the arena level there are to be no less than 29 exit doors, which assuming the number of persons capable of being collected in the Hall, will be one for every 275 persons. For the refreshment department there will be provision made for dining, if necessary, 1,000 persons; but the kitchen will admit of any extension required, and the hall will give the power of dining in the arena and on the two gallery floors no less than 2,000 persons. It is contemplated that during great choral festivals the conservatory of the Royal Horticultural Society will be lighted and thrown open to visitors to the Hall as a promenade.

PARIS EXHIBITION.

The weather has been as bad here as in London, only two fine days or so during the last fortnight, but the public has fallen into the habit of going to the Exhibition, and, as the weather permits of little promenading in the park and garden, the building itself is at least as well filled as it was during the precociously hot weather which ushered in the month of May. The means of transit from, if not to, the exhibition are still far below the requirements of the public; the trains on the railway are unaccountably few in number, only one per hour during the greater part of the day; the steam-boats are too small, the omnibuses too few, and as to cabs, nothing will induce the drivers to go to the Champ de Mars for a fare when they find them with the greatest ease in the heart of Paris. As usual, in Paris, individual enterprise is not to be depended upon; and although the authorities have had more than one meeting of cab-proprietors, nothing has yet arisen out of them to supply the public want. The only extraordinary effort that has been made is the conversion of a number of very rude vans, with tarpaulin covers, into public conveyances, but they are a mere drop in the ocean of tired pedestrians wearily trying to make their way to the town, where they may recruit their famished bodies at prices more moderate than those of the Exhibition, which are tolerably high, though perhaps not extravagantly so. The great international restaurant has a large number of visitors, but while its position, in the furthest part of the park, is no obstacle in the case of hale men, it is so as regards many other persons, especially after the fatigues of the Exhibition.

For the Exhibition itself, that is to say, the contents of the building, every day brings its importance more and more to light. The juries have completed their examination, and although nothing is yet officially known concerning the awards, it is not too early to point out a few of the novelties, improvements, and examples of excellence, which must have attracted the attention of the juries, as well as of other observant persons. The general progress of science, art, and taste is of course a subject of interest to all the world; but charity begins at home, and it would be mere hypocrisy to pretend that the figure which Great Britain makes in the Exhibition is not uppermost in the minds of Englishmen.

We have already said something on this head in connection with the fine arts and the "Histoire de Travail," or retrospective gallery. It is time now to take a general glance at the industrial portion of the Exhibition, and, for more reasons than one, the great machinery court or gallery of the useful arts claims precedence. And first, as regards machinery in motion, it may be stated that the arrangements for the supply of motive power are on a liberal scale, and Great Britain is better off than her neighbours in one of her specialties, namely steam. Messrs. Galloways, aided by two other boilers, those of Messrs. Heywood and Tyler, and Howard, supply all that is required to keep anything moving that is intended to move during the whole number of hours that the Exhibition is open, while in the other departments an evident economy of power is necessary. When the great machinery court has been carefully examined, it will hardly be said that the importance of the English collection of machinery is unworthy of the nation. The limits of the *Journal* will only permit of a summary notice of the most striking objects, and of short notes even respecting them. At the head of the machinery stand the steam-cranes, which must not be overlooked; they did great service; they enabled the British commission to outstrip all their rivals in getting their portion of this enormous court early into order, and they await the closing day to render like service again. There was, as far as we know, no steam-crane on the ground before those from England arrived, and certainly no other nation made such extensive use of them. Close to them stands a collection of other machinery and apparatus,

very different, indeed, in aspect, but having the same useful object, namely, the rapid despatch of business; these are the models contributed by her Majesty's Post-office, the railway sorting carriages, the ingenious apparatus for picking-up and dropping letter-bags on the lines, and the tables and other arrangements for sorting and stamping the letters. In this department we stand yet completely unrivalled, and the Post-office models are a source of constant admiration. We understand that Prussia has some arrangement for the taking-up of bags *en route*, but we believe that no other country has yet adopted a plan so long in operation, though in its present complete form, in our own country.

Close to the Post-office models stands a case which contains illustrations of another of England's triumphs, during the twelve years that have elapsed since a universal exhibition was held in Paris, namely, the models of the machinery used in the process of making Bessemer steel, which is now adopted more or less all over Europe.

Amongst the first model machines that the visitor encounters in the same part of the gallery are three for mining and tunnelling; one of these is the "iron man," or coal-getting machine of Messrs. Carrett, Marshall, and Co., of Leeds, moved by water power under high pressure, and which works by scoops affixed to a prolonged piston arm; and the machine of Messrs. Jones and Levick for the same process, but in a very different manner, the action being that of an immense pick, with a radial sweep of four or five feet, and worked either horizontally or perpendicularly by a compressed air engine, at the rate of 200 strokes a minute.

The third machine referred to is Capt. Beaumont's rock boring machine and tunnelling machine, also moved by a compressed air engine. This machine is known to engineers, having been used for some time at the Varray waterworks at Bolton le Moors, but others may be interested to know that it consists of a large wheel, or chuck, armed with 50 powerful chisels, or, as they are technically called, "jumpers," which have a circular and reciprocating motion, caused by the alternate advance and retreat of the piston and axis of the chuck, while a still larger jumper or drill, with an X cutting face, works a hole in the centre. It is said that with about 15-horse power, this machine will cut a circular groove in hard rock to the depth of a foot; when the groove is cut to the depth of 2ft. or 2ft. 6in., the machine is drawn back, powder is placed in the central hole, and the isolated circular pieces of rock blown to pieces.

Near this spot are several steam engines of new or improved construction which must not be overlooked. They include a horizontal engine by Messrs. Donkin, a powerful one by Galloway, an Allen engine by Whitworth, a Corliss engine by Hick, of Bolton, two improved portable engines by Ransome and Sims, and the steam-hawling engine of Baron de Mesnil, made by Fowler.

In this section of the court may be seen in action models of one of the most important tools that has ever been designed, namely, Ramsbottom's patent duplex horizontal steam hammer, manufactured by Messrs. Thwaites and Carbutt, of Bradford. There are only seven of these hammers yet at work, one of 30 tons at Crewe, and six of ten tons in other places, so that this must be regarded as a positively new form of tool. The same firm shows one of the finest pieces of iron workmanship in the exhibition, a wrought-iron stand for a vertical hammer, with balanced piston, for working Bessemer steel.

The working model of a steam pile-driving engine, and a full-sized engine of the same kind, but different model, in the park must not be left unnoticed.

The wood-working machines are numerous in the exhibition; and while the lighter kind differ but little from those of our own friends in this country, where the famous ribbon saw was, we believe, invented, or at any rate first exhibited in 1855, the heavier machines show an immense improvement in the arrangement of

their parts and the solidity of their construction; the development of this class of machine tools is a fact which marks the interval between the two Paris Exhibitions.

Since the first Great Exhibition our neighbours have made great strides in the construction of iron working machine tools; but an inspection of those in the present exhibition will not injure the reputation of Great Britain for the production of these most important of all engines except the steam-engine. The show is very large, and almost without exception there is evidence everywhere of improvement—in principle, in detail, and in workmanship; where all is so good it is almost invidious to select one name, but there is in the collection of Messrs. Sharp, Stewart, and Co., a connecting rod completely finished by machines of this kind, which may well be cited as an example of the perfection of the best British tool-making machines. For perfection of workmanship again we must quote the taps and dies and the templates exhibited by Whitworth and Co., and Sharp, Stewart, and Co., not as anything new, but certainly as unsurpassed.

The spinning and weaving machinery in the British side is certainly second to none in the exhibition.

Amongst scientific apparatus must be mentioned the improved revolving lights of the Trinity-house, shown within the machinery court, and the magneto-electric light of Professor Holmes, and his steam fog-horn, worked by condensed air, in the park. The machines used for the magneto-electric light are placed for inspection in a small building at the foot of the scaffolding upon which the light is supported. The fog-horn, every now and then sends its loud but musical notes across the park from the French lighthouse, where it has been hospitably housed; we understand that the French Government has adopted this valuable nautical safeguard.

Besides, further portions of the machinery court are devoted to apparatus of various kinds, and innumerable accessories; and amongst the objects which deserve special notice are the lap-welded and other tubes, joints, coil, and hollow ware of various kinds; railway and other springs, buffers, &c., of which there is a large show by nearly all the great firms.

The show of improved blacklead crucibles, too, is striking, and those of the Patent Crucible Company particularly so, as having, as certificates show, being adopted by nearly all the mints in Europe, including that of Paris; such crucibles used to serve but one heat, now they bear the fierce heat of the gold furnace fifteen or sixteen times.

In telegraphic apparatus England makes a very poor show, but the name of Wheatstone is a host in itself; and Messrs. Siemens have some apparatus and novelties in the way of hollow conical iron posts, for over-ground telegraphs and insulations. But in railway signalling apparatus England certainly stands first. The beautiful model of Messrs. Saxby and Farmer's system of signals in use at the Cannon-street station, exhibited by the maker, has attracted great attention, and the arrangement has been adopted recently for the Belgian lines.

Stoneware and other sanitary apparatus is also largely and admirably represented; while means of preservation of life are represented by a noble lifeboat, three steam and other fire-engines, and a fire-escape, which creates great curiosity. The steam fire-engines have been tried several times, and on one occasion Merryweather's large engine threw a stream of water over the top of the French lighthouse, which is 150ft. high.

In the *Journal* of the 10th instant was given the list of medals awarded in the class of painting; those of the other classes of the Fine Art group have now been announced. In sculpture Mr. Wyon obtains a third-class medal; in architecture, a grand medal is awarded to Mr. Waterhouse; a medal of the first-class to the late Captain Fowke; a second-class medal to Mr. Lynn; and one of the third-class to Mr. Ed. Barry.

In engraving and lithography, England obtains no distinction of any class. Considering that the English engravers exhibiting number nearly fifty, and considering also the high esteem that British engraving enjoys in France, the non-appearance of the name of any English engraver or lithographer in the list of awards is strange.

The analysis of the fine art rewards gives the following result:—

	France. Prizes.	Other countries. Prizes.
Painting.....	32	35
Sculpture	23	13
Engraving, &c.....	8	5
Architecture	12	11

So that, according to the opinion of the international juries, painting is relatively her weakest, and sculpture her strongest, art point.

Colonies.

COMMUNICATION WITH AUSTRALIA.—A conference has been held at Melbourne, consisting of the representatives of the different colonies. It was decided to maintain mail communication with Europe by the three routes, namely, Suez, Panama, and Torres Straits. The preliminary steps to permanently carry out this arrangement will be to memorialize the Imperial authorities to terminate the existing contract with the Peninsular and Oriental Company, and at the same time to ask the Home Government to grant a moiety to be contributed in agreed-to proportions by the different colonies. It is expected that the Torres Straits route will be of great advantage to Queensland, in indirectly helping to open up the northern portions of that vast colony. By the new arrangement on this route it is intended that the mail steamers should sail direct from Singapore, without calling at Batavia, as doing so would involve a loss of two days. Queensland undertakes to light and buoy the straits, and ultimately to extend the telegraph wires to Cape York. When this is done—and it is expected that two years will see its accomplishment—Australia will be placed within twelve days' telegraphic communication with England. Of course the different intercolonial governments will have to endorse the doings of the delegates in Melbourne before any decided action can be taken, but where the advantages are believed to be so obvious it is not expected that any difficulty or delay will occur on this score. It may be added that the sum of £400,000 was agreed upon as a sufficient subsidy to carry out the recommendations of the delegates.

Correspondence.

MR. FOTHERGILL COOKE'S PAPER.—SIR,—I beg to correct a slight error in the report of what I said in the discussion on Mr. Cooke's paper, read on Wednesday the 15th inst. I did not speak of "the power of the saws to cut deeper than their semi-diameter," which would be an impossibility; what I intended to convey was that the property in Mr. Cooke's saw, of not decreasing in semi-diameter by wear, was a great advantage. Also, both at pages 424 and 425, the word "Hand saws" should have been printed "Sand saws."—I am, &c.,

R. J. LECKY.

The Collinge Engineering Works,
190, Westminster-bridge-road, May 20th, 1867.

THE FOOD COMMITTEE.—SIR,—A gentleman who gave evidence before the Food Committee on the 17th April, states that the cattle in Australia are in best condition for slaughtering during the hot weather, when it is difficult to cure the meat; and that if the cattle were killed in the winter, the meat would be in such a thin and lean

condition that it would not be acceptable in this country. I think want of local knowledge has led this witness a little astray. During a residence of upwards of 20 years in Queensland and New South Wales, engaged the whole of that time in the active management of large cattle stations, I have always found cattle to be in their best condition in May, June, July, and August, these being the four coolest months of the year. The reason is obvious; the grass is in the best fattening condition from January to June, and of course the cattle are in their prime as the grass begins to go off; in other words, after they have derived all the benefit they can from the luxuriant pasture. As to meat preserved in canisters "producing dysentery from the effect of certain gases generated in the canisters," I suspect the fact is, that if meat on the verge of decomposition is packed in canisters, it will undoubtedly produce dysentery, and so it would if it had been eaten without being packed in canisters. If the meat is perfectly fresh when it is hermetically sealed, there need be no fear of dysentery, or any "hurtful gases being generated." At the Australian Meat Company's preserving establishment the beef is hermetically sealed, and the whole operation concluded within twenty-four hours from the time the bullock is slaughtered.—I am, &c., THE MANAGER OF THE AUSTRALIAN MEAT COMPANY.

137, Houndsditch, London.

MEETINGS FOR THE ENSUING WEEK.

- MON.....R. Geographical, 1. Annual Meeting.
TUES ...R. Medical and Chirurgical, 8½
Civil Engineers, 8. President's Annual Conversazioni.
Royal Inst., 3. Prof. Miller, "On Spectrum Analysis."
WED ...Society of Arts, 8. Mr. J. B. Denton, "On the Water Supply of the Metropolis in relation to the Conservancy of the Thames and its tributaries, and the demands of the Water Companies."
THUR ...Antiquaries, 8½.
Royal Inst., 3. Prof. Huxley, "On Ethnology."
London Inst., 7. Prof. Bentley, "On Botany."
Philosophical Club, 6.
FRIRoyal Inst., 8. Mr. T. S. Hunt, "On the Chemistry of the Primæval World."
R. United Service Inst., 3. Colonel R. A. Shafro Adair, "Communications, Military and Commercial, between the Steppes of Central Asia and Hindustan."
SATR. Botanic, 3½.
Royal Inst., 3. Prof. Huxley, "On Ethnology."

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

- Par.
Numb.
Delivered on 15th May, 1867.
147. Bill—Army Enlistment.
148. " Army Reserve.
149. " Militia Reserve.
73. (iv.) Railway and Canal Bills—Fifth Report.
271. East India (Mysore)—Return.
284. Cattle Plague—Return.
290. Navy—Revised Estimate for Vote 10 (Naval Stores, &c.).
Railways—Report of Commissioners.
Education (Scotland)—Second Report of Commissioners.
Public General Acts—Cap. 17 and 18.
Public Petitions—Twenty-second Report.

Delivered on 16th May, 1867.

145. Bill—Courts of Law Officers (Ireland).
159. Tithe Commutation—Returns.
274. National Portrait Gallery—Tenth Report.
277. Tenements, &c. (Ireland)—Returns.
279. Ramsgate Harbour—Statement.

Delivered on 17th May, 1867.

150. Bill—Landed Property Improvement and Leasing (Ireland).
238. Criminal Offenders (Scotland)—Abstract.
244. County Courts—Return.
246. Foreign Sugar—Return.
247. Sugar, &c.—Return.

Delivered on 18th May, 1867.

132. Bill—Judgment Debtors (amended).
133. " Bankruptcy Acts Repeal (amended).
131. " Bankruptcy (amended).
146. " Representation of the People (Scotland).
155. " Vice Admiralty Courts Act Amendment.
52. East India (Home Accounts)—Return.
72. Malt and Barley—Returns.
73. Malt and Beer—Return.

285. Law and Chancery Commission—Report.
288. East India (Civil Service Examinations)—Return.
289. East India (Mutiny Prize Money)—Return.
Public Petitions—Twenty-third Report.

Delivered on 20th May, 1867.

153. Bill—Lis pendens.
154. „ Judges' Chambers (Despatch of Business).
223. Courts of Law, &c.—Return.
258. East India (Progress and Condition)—Statement.
296. Army (Manufacturing Departments)—Return.
297. Army (Shot and Shell)—Returns.
302. Railways—First Report from the Select Committee.
Railways—Minutes of Evidence taken before the Commissioners (March, 1865, to May, 1866).

Patents.

From Commissioners of Patents' Journal, May 17th.

GRANTS OF PROVISIONAL PROTECTION.

Alcohol, &c.—1288—J. F. Collins.
Axles, rails, &c.—1244—G. Severn.
Bobbins—1236—E. T. Hughes.
Boilers—1005—J. Ogden and J. Stephenson.
Boilers—1237—P. J. J. Allibert.
Boots and shoes—1240—E. Waterman.
Boots and shoes—1286—J. H. Johnson.
Brakes—1111—A. A. Langley.
Bricks—1147—W. Kirrage.
Buckets—1235—J. Bird.
Buffalo horn, preparation of—1159—J. B. Roby.
Buildings for horticultural uses—1268—S. Newington.
Buttons—1214—G. A. Huddart.
Cartridges—1117—J. W. Cochran.
Cartridges—1173—J. Plews.
Cartridges—1216—L. B. Bruen.
Cartridges—1231—C. E. Brooman.
Colours, manufacture of—1151—T. V. Lee and C. E. Lankester.
Cooking apparatus—1191—T. South.
Cords, &c., elastic—1133—A. Turner.
Cotton gins—1215—W. E. Newton.
Cotton, gun—1129—E. C. Prentice and T. Richardson.
Designs upon fabrics—1182—J. Brickles, J. S. Jackson, and W. S. Berry.
Doors—1062—F. Waller.
Drying process—1195—G. Gordon.
Easels—1073—R. Day.
Fibrous materials, spinning, &c.—1131—S. Shore.
Fibrous materials, treating—1207—J. W. Barton.
Fibrous substances, spinning—1223—J. Speight.
Fibrous substances, winding, &c.—1241—J. Combe.
Fire-arms, breech-loading—1143—E. Lindner.
Fire-arms, breech-loading—1163—J. W. Cochran.
Fire-arms, breech-loading—1167—J. Needham.
Fire-escapes—1139—J. Scott.
Fires, igniting—1149—J. McKechnie.
Floors, fireproof—1220—D. Birkett.
Floors, &c., fireproof—1270—J. Thomlinson.
Fluids, regulating supply of—1199—C. E. Wetton and W. Galsworthy.
Flux for welding, &c.—1264—J. H. Johnson.
Fret-sawing machine—1246—R. and R. W. Booth.
Furnaces—1227—J. Swinburne.
Gas burners—227—W. H. Stallard.
Gas burners—1024—F. A. Mocquard.
Gases, &c., regulating pressure of—1217—G. Pollard.
Hammers—1067—J. H. Johnson.
Hats—247—J. H. Brown and W. Bull.
Hoists—1226—W. Crooke and T. Wrightson.
Hops, apparatus for training—203—H. Boys.
Horse-shoes—1119—W. R. Lake.
India-rubber, &c., cutting—1193—F. Crossley.
Lamps, securing—195—W. Burley.
Life-boats—1211—A. M. Clark.
Looms—1109—R. L. Hattersley.
Looms—1175—D. Whittaker and B. Croasdale.
Looms—1205—E. G. Fitton and S. Dear.
Looms—1252—G. Hodgson.
Lubricators—1224—J. W. Lowther.
Magneto-electric machines—1210—J. H. Johnson.
Manure—1104—C. G. Gillyatt.
Manure—1229—E. Guenin.
Manures—1243—T. and T. L. G. Bell.
Match boxes, &c.—1250—G. Davies.
Mattresses, &c.—1258—W. E. Gedge.
Minerals, apparatus for breaking down—1137—W. Cochrane.
Motive-power engines—1225—T. Paton.
Motive-power engines—1300—J. Ramsbottom and T. M. Pearce.
Needle-cases—1260—R. Young.
Nuts, screw—1292—A. M. Clark.
Oakum—1121—J. E. Hodgkin.
Packing for boxes—1234—G. Davies.
Paint, &c., mixing—1185—J. Smalley and S. Bridge.
Paper—1171—C. T. and E. Hook.
Pipes, smoking—1141—E. Wolf.
Presses—681—A. Millar.

Printing machines—1115—W. Clark.
Pumping engines—1181—A. V. Newton.
Pumps—1123—G. Simpson.
Rakes, horse—1157—E. Howell and T. Hardy.
Safety-valves—1284—T. Wood.
Screens, revolving—1282—C. Dutton.
Seeds, &c., separating—1125—E. B. and J. P. Nunn.
Sewing machines—1286—J. Stuart and J. H. Smith.
Signals, &c., railway—1221—J. Cariss.
Silk, preparation of raw—1294—J. H. Johnson.
Sofas, &c.—1228—J. Taylor.
Spray producer—1222—J. Dewar.
Staircases—1278—C. H. Collette.
Steam engines—1203—J. Millward.
Storm-signals—1262—H. A. Clum.
Sugar—1254—A. M. Clark.
Sugar machines—1177—W. R. Lake.
Sugar, refining—1179—W. R. Lake.
Tapes, &c., making up—1242—R. Smith and M. B. Westhead.
Taps, measure—1248—R. W. Ridley and J. Withers.
Telegraphs—1213—W. Clark.
Tents—1209—J. Archibald.
Tickets, apparatus for issuing—1183—J. Haworth.
Velocipedes—1161—W. G. Crossley.
Walls, &c., coverings for—983—J. Mahler.
Weaving machinery—1290—C. Chevron.
Weavings, narrow—1187—T. Tivey.
Wire, galvanizing—1169—W. E. Gedge.
Yarns—1135—J. W. Dalby and G. O. Chapman.
Yarns—1233—J. F. Lawton.
Yarns, &c., warping—1232—T. Watson.

PATENTS SEALED.

3029. J. Bernard.	3212. P. E. De Wiscoq and L. Krasinski.
3042. C. D. Abel.	3253. W. E. Newton.
3045. E. Thomas.	3360. W. R. Lake.
3057. J. Brindley.	3405. A. V. Newton.
3060. E. Morewood.	199. G. Haseltine.
3066. P. R. M. Le Guen.	233. A. Donnet.
3069. J. Berry, J. B. Turner, and C. Vickerman.	470. G. Haseltine.
3071. J. H. Johnson.	533. G. Haseltine.
3076. M. Marks.	560. S. B. Allen & J. H. Winsor.
3114. W. Clark.	590. E. Thring.
3178. W. H. Harfield.	755. W. R. Lake.
3197. T. Bridges and J. Bigwood.	

From Commissioners of Patents' Journal, May 21st.

PATENTS SEALED.

3010. C. E. Brooman.	3124. W. Clark.
3063. R. Potter.	3128. R. Norfolk.
3064. J. Coulson.	3138. L. A. Fargon.
3065. F. Tyerman.	3145. W. Brookes.
3088. F. R. A. Glover.	3155. P. McGregor.
3093. J. Mitchell & W. C. Laird.	3175. F. Volkmann.
3094. R. B. Jones.	3176. A. Hermann and H. Brethauer.
3095. W. Bass.	3187. F. Kohn.
3096. W. B. Johnson.	3203. T. J. Chubb.
3097. J. K. Leather.	3206. J. Barwick and S. Tindall.
3099. C. H. Southall, R. the Heap, and J. Tasker.	3289. A. V. Newton.
3105. W. R. M. Thompson.	3432. G. Payne.
3109. W. Taylor.	5. M. Henry.
3111. T. J. Barron.	351. W. Clark.
3115. J. H. Johnson.	651. W. H. Towers.
3122. T. Dickens, H. Heywood, and J. Holland.	798. E. L. Sturtevant.
	838. G. T. Bousfield.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

1240. J. Fletcher.	1232. J. Womersley.
1247. P. Bawden and J. and S. Williams.	1264. J. Combe & J. H. Smalpage.
1270. J., E. G., & C. H. Freeman.	1285. C. P. Coles.
1277. W. Tasker.	1290. G. T. Bousfield.
	1293. J. Adams.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

1195. J. Higgins and T. S. Whitworth.	1266. W. Clissold.
1198. J. Denis.	1289. W. E. Newton.
1313. J. H. Johnson.	1290. J. Paddon and W. Lowther.
	1347. W. H. Harfield.

Registered Designs.

4857—April 25—Reliance letter box—P. T. Hendry, 8, Dixon-street, Glasgow.
4868—May 11th—A sash pulley—G. A. Young, 34, Eagle-street, Holborn.
4869—May 18th—Smoke consumer—W. Kitchen, Bowman-lane Dye Works, Leeds.